



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/678,728	10/03/2003	Robert C. Lam	01132/01032	6127
43215	7590	04/14/2006	EXAMINER	
BORGWARNER INC. PATENT DEPARTMENT 3850 HAMLIN ROAD AUBURN HILLS, MI 48326-2872			SANDERS, KRIELLION ANTIONETTE	
			ART UNIT	PAPER NUMBER
			1714	

DATE MAILED: 04/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/678,728

Applicant(s)

LAM ET AL.

Examiner

Kriellion A. Sanders

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2006.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-20 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/05.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1- 4, 10-13, 15-18 and 20 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-22 of U.S. Patent No. 6630416.

Although the conflicting claims are not identical, they are not patentably distinct from each other because both patent and application disclose friction materials having base and secondary layers of common components as described below.

3. Claims 1-20 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-22 of U.S. Patent No. 6630416 in view of Lam et al, US Patent No. 5858883.

The references are described in detail below. Lam '416 differs from applicant's invention in that it does not clearly suggest using graphite as a component of the base layer. However the two patents to Lam et al teach essentially the same components with the exception being that Lam '416 utilizes carbon particles while Lam '883 is utilizes graphite. Lam '416 also discloses that it is suitable to use at least 65% by weight of fiber and 15% by weight of filler in the base layer.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to employ the graphite of Lam '883 in lieu of the carbon fibers of Lam '416 with the expectation of producing highly effective friction materials, particularly since graphite is a form of carbon.

Claims 1- 4, 10-13, 15-18 and 20 are directed to the same invention as that of claims 1-22 of commonly assigned US Patent No. 6630416. The issue of priority under 35 U.S.C. 102(g) and possibly 35 U.S.C. 102(f) of this single invention must be resolved.

Since the U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP Chapter 2300), the assignee is required to state which entity is the prior inventor of the conflicting subject matter. A terminal disclaimer has no effect in this situation since the basis for refusing more

Art Unit: 1714

than one patent is priority of invention under 35 U.S.C. 102(f) or (g) and not an extension of monopoly.

Failure to comply with this requirement will result in a holding of abandonment of this application.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1- 4, 10-13, 15-18 and 20 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Lam et al, US Patent No. 6630416.

Applicant's claims pertain to a friction material comprising:

A.) A porous primary layer comprising a fibrous base material impregnated with at least one curable resin and

B.) A secondary layer on the surface of the primary layer comprising a carbonaceous material and friction modifying particles in an amount of 5-35% by weight of the fibrous base material.

The primary layer may include aramid fibers, cotton fibers, carbon fibers, graphite fibers and a filler material. The secondary layer may include a mixture of carbon particles and silica particles. A process for producing the friction material is also claimed.

Lam et al, '416 discloses a fibrous base material comprising a primary layer of fibrillated *aramid* (and optionally cotton fibers, carbon fibers, carbon particles and a filler material such as diatomaceous earth); and a secondary layer of friction modifying particles on at least one surface of the fibrous base material for use in a non-asbestos friction material. In certain embodiments of the invention, the fibrous base material is impregnated with a *phenolic or phenolic*-based resin material, including, for example, a mixture of a *phenolic* resin and a silicone resin.

The fibrous base material comprises a primary layer of a plurality of fibrillated *aramid* fibers, and has a freeness of at least about 450 on the Canadian Standard Freeness (CSF) index.

The fibrous base material of the invention may comprise for example, about 10 to about 50%, by weight less fibrillated *aramid* fiber; about 2 to about 15%, by weight, carbon fibers; about 20 to about 35%, by weight, filler material; and about 0.2% to about 20%, by weight, carbon particles. The fibrous base material may also comprise about 5% to about 20% cotton fibers. The sum of aramid and cotton fibers therefore may be 70%. This amount reads directly on the amounts of applicant's current claims.

In certain embodiments, cotton fiber is added to the fibrous base material of the present invention to give the fibrous material higher coefficients of friction. In certain embodiments, about 5 to about 20%, and, in certain embodiments, about 10% cotton can also be added to the fibrous base material.

The "Canadian Standard Freeness" (T227 om-85) means that the degree of fibrillation of fibers can be described as the measurement of freeness of the fibers. The CSF test is an empirical procedure which gives an arbitrary measure of the rate at which a suspension of three grams of fibers in one liter of water may be drained. Therefore, the less fibrillated aramid fibers have

Art Unit: 1714

higher freeness or higher rate of drainage of fluid from the friction material than other aramid fibers or pulp. Friction materials comprising the aramid fibers having a CSF ranging from about 430-650 (and in certain embodiments preferably about 580-640, or preferably about 620-640), provide superior friction performance and have better material properties than friction materials containing conventionally more fibrillated aramid fibers. The longer fiber length together with the high Canadian freeness, provide a friction material with high strength, high porosity and good wear resistance. The less fibrillated aramid fibers (CSF about 530-about 650) have especially good long-term durability and stable coefficients of friction.

Various fillers are also useful in the primary layer of the fibrous base material of the present invention. In particular, silica fillers, such as diatomaceous earth, are useful. However, it is contemplated that other types of fillers are suitable for use in the present invention and that the choice filler depends on the particular requirements of the friction material

The secondary layer of the friction modifying particles is deposited on the primary layer to form the fibrous base material. Various friction modifying particles are useful as the secondary layer on the fibrous base material. Useful friction modifying particles include silica particles; resin powders such as phenolic resins, silicone resins epoxy resins and mixtures thereof; partial and/or fully carbonized carbon powders and/or particles and mixtures thereof; and mixtures of such friction modifying particles. In particular, silica particles such as diatomaceous earth, Celite.RTM., Celatom.RTM., and/or silicon dioxide are especially useful. The silica particles are inexpensive organic materials that bond strongly to the fibrous materials. The silica particles provide high coefficients of friction to the friction material. The silica particles also provide the friction material with a smooth friction surface and provides a good

"shift feel" and friction characteristics to the friction material such that any "shudder" is minimized.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lam et al, US Patent No. 6630416 as applied to claim 1- 4, 10-13, 15-18 and 20 above, and further in view of Lam et al, US Patent No. 5858883.

Lam et al, '883 discloses a fibrous base material comprising a primary layer of less fibrillated **aramid** fibers, synthetic **graphite** and at least one filler material; and a secondary layer of carbon particles on at least one surface of the fibrous base material for use in a non-asbestos friction material. In certain embodiments of the invention, the fibrous base material is impregnated with a **phenolic or phenolic**-based resin material, including, for example, a mixture of a **phenolic** resin and a silicone resin. The fibrous base material comprises a primary layer of a plurality of less fibrillated **aramid** fibers, and has a freeness of at least about 450 on the Canadian Standard Freeness (CSF) index. The fibrous base material of the invention may comprise about 10 to about 50%, by weight less fibrillated **aramid** fiber; about 10 to about 35%, by weight, synthetic **graphite**; about 20 to about 45%, by weight, filler material; and about 0.2% to about

Art Unit: 1714

20%, by weight, carbon particles. The fibrous base material may also comprise about 20% to about 40% cotton fibers. The fibrous base material of the invention includes porous material ranging in mean average size from about 2.5 to about 12 microns in diameter. The friction material has readily available air voids of at least about 50%. Example E of the invention includes a fibrous base material comprising about 25% less fibrillated *aramid* fibers, about 20% synthetic *graphite*, about 25% diatomaceous earth, and about 30% cotton fibers and is impregnated with an epoxy-*phenolic* resin. Lam et al also discloses various methods for forming the friction materials of the invention, wherein the fibrous base material is impregnated with the *phenolic* or modified *phenolic* resin, preferably so that the impregnating resin material comprises about 45 to about 65 parts, by weight, per 100 parts, by weight, of the friction material. After the fibrous base material has been impregnated with the resin, the impregnated fibrous base material is heated to a desired temperature for a predetermined length of time to form the friction material. The heating cures the *phenolic* resin at a temperature of about 300 degree. F. When other resins are present, such as a silicone resin, the heating cures the silicone resin at a temperature of about 400.degree F. Thereafter, the impregnated and cured friction material is adhered to the desired substrate by suitable means. No patentable difference is readily ascertained between present and patented inventions. Since all parameters of applicant's invention are disclosed by patentee, it would have been obvious, if not fully anticipatory, to one of ordinary skill in the art to select the components set forth in the patent and employ them within the disclosed weight ratios and in the manner described by patentee. See col. 6, line 38 through col. 10, line 39.

Art Unit: 1714

Lam '416 differs from applicant's invention in that it does not clearly suggest using graphite as a component of the base layer. However the two patents to Lam et al teach essentially the same components with the exception being that Lam '416 utilizes carbon particles while Lam '883 is utilizes graphite. Lam '416 also discloses that it is suitable to use at least 65% by weight of fiber and 15% by weight of filler in the base layer.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to employ the graphite of Lam '883 in lieu of the carbon fibers of Lam '416 with the expectation of producing highly effective friction materials, particularly since graphite is a form of carbon.

Conclusion

2. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

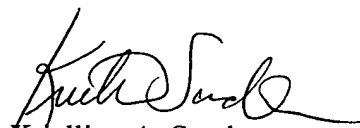
Art Unit: 1714

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kriellion A. Sanders whose telephone number is 571-272-1122. The examiner can normally be reached on Monday through Thursday 6:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kriellion A. Sanders
Primary Examiner
Art Unit 1714